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Hydrogen and alcoholic fermentation.—Through a study of the reduction of methylene blue, in the presence of yeast, LVOFF⁹ has found further evidence that reductase plays an essential rôle in alcoholic fermentation. Methylene blue is rapidly decolorized when placed in a yeast culture. This decoloration is brought about through the absorption of two atoms of nascent hydrogen (molecular H is not effective) at the double bond of the color group. Reductase activates the hydrogen. He finds the output of alcohol and CO₂ greatly lowered while the methylene blue is being reduced. Therefore the hydrogen, activated by the reductase, probably goes directly to the methylene blue molecule, thereby arresting the further normal steps of the fermentation process. Quantitative determinations of the CO₂ and alcohol produced and the hydrogen absorbed (by the methylene blue) showed that one gram-molecule of methylene blue takes from the fermentation medium one gram-molecule of hydrogen and “inactivates” one gram-molecule of hexose, thus preventing the splitting into alcohol and CO₂. Unfortunately, a study of this “inactivated” carbohydrate molecule has not been made.

Again, yeast when mixed with water only still has the capacity for reducing methylene blue. CO₂ is given off at the same time in amount directly related to the methylene blue reduced; for example, one gram-molecule methylene blue, under conditions favoring self-fermentation, takes one gram-molecule of hydrogen from the medium, liberating one gram-molecule of CO₂. The source of this CO₂ is yet unexplained. However, the author suggests the possibility that it comes from the fermentation of amino acids in the yeast, a suggestion in agreement with the work of EHRlich, and particularly with that of BACH, where from amino acids in the presence of alloxan, NH₃, CO₂, and 2H are eliminated (the 2H passing to the alloxan), leaving an aldehyde in the medium.—E. M. HARVEY.

Cytology and embryology of *Smilacina*.—*Smilacina* was studied some time ago by LAWSON,¹⁰ who reported that synapsis is due not to a marked contraction of the nuclear contents, but to a sudden enlargement of the nuclear cavity, which gives the appearance of a contraction. McALLISTER¹¹ claims that synapsis is due to contraction and not to any considerable enlargement of the nuclear cavity. It would seem as if this should be settled by measurement rather than by discussion, but since both men studied *Smilacina* and both made measurements, an extensive series of measurements of various forms would seem to be in order.

⁹ LVOFF, GERGIUS, Hefegärung und Wasserstoff. Zeitschr. Gärungsphysiol. 3: 289-320. 1914.

¹⁰ LAWSON, A. A., The phase of the nucleus known as synapsis. Trans. Roy. Soc. Edinburgh 47:591-604. pls. 2. 1911. Rev. in Bot. Gaz. 51:313. 1911.

¹¹ McALLISTER, F., On the cytology and embryology of *Smilacina racemosa*. Trans. Wis. Acad. Sci. 17:599-660. pls. 56-58. 1913.